

Evaluation of knowledge and oral healthcare practices among pregnant women in Pristina, Kosovo

Vlora Kurti, Besarta Pelaj

Faculty of Medicine, "Hasan Prishtina" University of Prishtina, Prishtina, Kosovo

ABSTRACT

Background. Pregnancy is an important period in a woman's life characterized by numerous physiological changes that can affect their oral health. For effective results, concerns about oral health during pregnancy should be checked and managed.

Aim of the study was to assess the knowledge, attitudes, and reported practices regarding oral health among pregnant women in Pristina.

Method. A descriptive cross-sectional study design was used, conducted in Pristina with a sample of 251 pregnant women treated at the University Clinical Center of Gynecology, in the Antenatal Care Department. The questionnaire included socio-demographic characteristics, obstetric history, women's knowledge of oral health, attitude toward oral health on the Likert Scale, and oral health practices.

Results. The study revealed that 70.11% of the interviewed women were aged ≥ 25 years, and 46.2% of them were from rural areas. Unemployed women comprised 66.1% of the studied group, and 45.41% of pregnant women were educated. The study results indicate that 54% of the surveyed women know about oral health. Less than half, 27.9%, agreed on the importance of dental check-ups during the first trimester, and about 35.9% lacked knowledge that poor oral hygiene could cause premature birth. The majority, 54%, of surveyed women brush their teeth more than once a day.

Discussion. The lack of professional knowledge is high, and most pregnant women need more information regarding this issue. Additionally, dental examinations are not performed on mothers, making it impossible to determine their current dental treatment needs.

Conclusion. Pregnant women's knowledge appears deficient in almost all variables included in the study, despite the majority choosing the correct alternative, a significant percentage of them responded with "don't know".

Keywords: oral health, pregnant women, knowledge, gingivitis, periodontitis

INTRODUCTION

Oral health can be defined as a standard of health of the mouth's tissues that enables an individual to eat, speak, and engage in conversations freely without active diseases, discomfort, or distress, contributing to overall well-being [1]. Periodontitis, gingivitis, and dental caries are among the oral and dental diseases that can affect pregnant women [2].

The World Health Organization's (WHO) oral health program has worked extensively in the last five years to raise awareness of oral health worldwide, as oral health is an essential component of overall health and quality of life [3].

Pregnancy is a physiological process characterized by elevated hormone levels [4]. Pregnancy can

influence the oral health of the mother, increasing her susceptibility to oral diseases associated with harmful effects on the newborn. Despite the severity of oral diseases during pregnancy, the demand for dental care is low, which can be improved through midwives' participation in promoting oral health activities [5].

Periodontitis is a destructive inflammation of the periodontium that affects approximately 30% of pregnant women. Maternal oral diseases such as gingivitis, dental caries, and periodontal infection impact the oral health of women and the oral health of their children. The increase in estrogen and progesterone levels during pregnancy leads to an exaggerated response of gum tissue to dental plaque, thus

Corresponding author:
Besarta Pelaj
E-mail: besarta.pelaj@uni-pr.edu

Article History:
Received: 23 January 2024
Accepted: 30 March 2024

increasing the risk of pregnancy gingivitis, which is exceptionally common and affects around 30% to 86% of all pregnant women [6].

Dental caries is the second most significant oral cavity disease during pregnancy, and if left untreated, it can lead to local and systemic complications. The presence of dental caries during pregnancy, especially postpartum, poses an increasing risk for the early development of caries in childhood. Cariogenic bacteria can be transmitted through saliva to the oral cavity of the infant [7].

Epidemiological evidence suggests that periodontal disease is associated with an increased risk of pregnancy-related complications and adverse birth outcomes, including pre-eclampsia, low birth weight, preterm birth, spontaneous abortion, and stillbirth [8]. Despite this evidence and the known complications for mothers and their newborns, this important topic has received less attention than it deserves.

INSTRUMENT

The reliability of the questionnaire in collecting data from a diverse geographical study population has been validated through various studies. To enhance the reliability of the research instrument, we took measures to ensure that the question issues were derived from a comprehensive literature review on the importance of maintaining oral hygiene during pregnancy. Additionally, expert review was conducted by professors in the relevant field from various academic institutions. The study fully integrated recommendations and suggestions provided by the participants. The research was conducted in Prishtina, with a sample size of (n=251) pregnant women participating in the study, treated at the University Clinical Center-Gynecology, in the Antenatal Care Department. Demographic data were analyzed according to the residence, education level, employment, age group, and parity. All collected data were grouped according to the predefined questions and processed using the statistical software SPSS (Statistical for Social Sciences Version 20.0).

THE PURPOSE OF THE PAPER

This research on oral health, treatment, and its potential impact on the health of mothers and newborns will benefit healthcare professionals, nurses, and midwives who are uniquely positioned to advise pregnant women on oral health during the antenatal and pregnancy periods. Knowing that oral diseases present widespread issues globally, causing serious problems for individuals, families, and healthcare services even in our country, it poses a frequent chronic concern encountered in healthcare services. This research examines issues with oral health that

commonly occur during pregnancy and their management, guidelines for antenatal advice, dental procedures that can be performed during pregnancy, and advice that can help prevent diseases such as caries, gingivitis, and periodontal disease. From numerous studies conducted worldwide, there is evidence of a high prevalence of diseases of the supporting apparatus. It can rightfully be said that these diseases are among the most common afflictions of humanity. It is a fact that periodontal diseases, along with caries and its complications, are responsible for the loss of a significant number of permanent teeth. This requires, from a scientific and socio-medical standpoint, an opportunity to examine the etiology, prevention, and early detection, as well as the application of therapeutic measures as a necessity for therapy and rehabilitation from these diseases.

Hypothesis of the research: The knowledge of pregnant women about oral health, and the impact on pregnancy is at an optimal level.

MATERIAL AND METHOD

A total of 300 questionnaires were distributed to the study population. However, only 251 of the questionnaires were filled in correctly. The research has a cross-sectional descriptive method, descriptive design. The study was conducted in Prishtina, namely at the University Clinical Center of Kosovo. The sample selection was randomized, the subjects were aged between 18-45 years and agreed to participate and signed the consent form. The duration of the research was a period of 6 months.

Pilot study

A pilot study was conducted with (21 women) of the study sample who participated in the antenatal care ward in Gynecology. The University Clinical Center of Kosovo to evaluate the clarity and applicability of the tools that were used in the study, before the start of the data collection as well as to evaluate the time needed for response. The results of the pilot study were not included in the sample size and from the data analysis of the pilot results, significant modifications were made to be the most understood words.

Results of the study

Demographic variables derived from the collected and presented data in Table 1 are summarized below: Almost 39.9% (N=251) of the study sample indicated that they are employed. This category included self-employed individuals and others employed by the government, organizations, and businesses. About 66.1% reported that they were currently unemployed at the time of participating in this study.

TABLE 1. Provides a summary of the results of the socio-demographic variables of the pregnant women who fully participated in the study

Categories	Variables	Number	Percentage
Age	18-24 year	75	29.88 %
	25 years and above	176	70.11 %
Educational level	Undergraduates, and below	137	54.58%
	Graduates and above	114	45.41%
Employment status	Employed	85	39.9 %
	Unemployed	166	66.1%
Parity	First-time mothers	116	46.21%
	2 children	63	25.09 %
	3 children	50	19.92 %
	4 or more children	22	8.8 %
Geographical location	Urban	135	53%
	Rural	116	46.2%
Marital status	Married	151	60.1 %
	Divorced	70	27.8 %
	Single	30	11.9%

Regarding parity, in terms of the number of child-births, over 46.21% (N=116) of participants are first-time mothers. Approximately 45.01% (N=113) have given birth to two or three children, while 8.8% have four or more children. This indicates that mothers with two or three children dominate the study population, while first-time mothers outnumber those with four or more children.

Further data show that 53% of the study population resides in urban areas, while 46.2% reported living in local rural areas.

Concerning marital status, we provided three response values, including married, single, and divorced. About 47.59% of the study population indicated they are currently married, 20.54% reported being single mothers, and 31.87% reported being divorced. Overall, it is clear that the study population is a diverse and strategic mix that can provide insights from various perspectives on oral hygiene.

According to Table 2, we can identify some correlations between different variables. Correlations data are reported in the form of the Pearson coefficient and are evaluated at the 0.01 and 0.05 levels of statistical significance. Knowledge about maintaining oral hygiene in pregnancy (Mean = 1.55, Std. Dev. = 0.58042): There is no correlation noted with any of the other variables. Awareness about teeth cleaning (Mean = 1.78, Std. Dev. = 0.64617): There is a positive and significant correlation with the knowledge about the use of dental floss (r = 0.479, the level of significance is 0.01). According to Table 2, we can identify some correlations between different variables. Correlation data were reported in the form of Pearson coefficients and were evaluated at the statistical sig-

TABLE 2. Knowledge correlation in pregnant women

Question Item	Mean	Std. Dev.	Correlation Pearson	N
Knowledge about maintaining oral hygiene during pregnancy	1.55	.58042	-	251
Awareness of teeth cleaning	1.78	.64617	0.479**	251
Knowledge about the use of dental floss	2.69	1.15544	0.433**	251
Perceptions about the impact of oral health on pregnancy	1.98	.86000	0.383**	251

**Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

nificance levels of 0.01 and 0.05. significant correlation with any of the other variables. Awareness of dental cleaning practices (Mean = 1.78, Std. Dev. = 0.64617): There is a positive and significant correlation with the knowledge of using dental floss (r = 0.479, the level of significance is 0.01).

There is a positive and significant correlation with perceptions of the impact of oral health during pregnancy (r = 0.383, the significance is 0.01). There is a positive and significant correlation with the perceptions about the impact of oral health in pregnancy (r = 0.383, the level of significance is 0.01). positive and significant correlation with awareness about teeth cleaning (r = 0.433, significance level is 0.01). Perceptions about the impact of oral health in pregnancy (Mean = 1.98, Std. Dev. = 0.860): There is a positive correlation significant with awareness about teeth cleaning (r = 0.383, the significance level is 0.01). From this analysis, it appears that there is a significant positive relationship between awareness of tooth cleaning and knowledge about the use of dental floss and the impact of oral health in pregnancy. These results may suggest that high awareness of tooth brushing may correlate with knowledge and positive perceptions regarding the use of dental floss and the impact of oral health during pregnancy.

From the above results, we see that we correlate knowledge and awareness about teeth cleaning is (rho=.479** p value=.000<0.1%) while the correlation between knowledge and attitudes is at the level of (r=.433** p value =.000<0.1%) while the correlation between knowledge and perceptions about the impact of oral health on pregnancy is (r=.383** p value =.000<0.5%) of the reliability level which proves research hypothesis.

You know that poor oral hygiene causes premature birth: There is a positive and significant correlation (r = 0.382, significance level is 0.05). This shows that people who are aware of the impact of

TABLE 3. Attitude of pregnant women, and reported practices regarding oral health

Characters	Frequency(n)	Percentage (%)	Mean.	Ds	P value
How long should brushing teeth last?					
• 1 minute	124	49.4	1.58	.624	-
• 1-3 minutes	109	43.4			
• 3 minutes	18	7.2			
Did you know that poor oral hygiene causes premature birth?					
• Yes	66	26.3	1.98	.86	r=382 p<0.05
• No	95	37.8			
• I don't now	90	35.9			
When is the best period for dental treatment during pregnancy?					
• First trimester	70	27.9	2.51	1.214	-
• Second trimester	66	26.3			
• Third trimester	32	12.7			
• I don't now	83	33.1			
Do you think pregnant women are more prone to dental disease?					
• Yes	203	81	1.34	.722	-
• No	11	4			
• I don't now	37	15			
Do you think that dental treatment during pregnancy has an impact on the development of the fetus?					
• Yes	32	12.7	1.69	.884	-
• No	148	59.			
• I don't now	71	28.3			
What causes dental disease in pregnant women?					
• Woman's physical change	15	6.0	2.38	.597	-
• Woman's hormonal change	126	50.2			
• I don't now	110	43.8			
Do you have swollen gingival spaces?					
• Yes	57	73.7	1.81	.477	-
• No	185	3.6			
• I don't now	9				
How often do you brush your teeth?					
• Once a day	85	34	1.78	.646	r = 479 p<0.01
• Up to twice a day	136	54			
• Three times a day	30	12			
When do you brush your teeth?					
• In the morning	32	12.7	3.3022.7	.883	P<0.01
• During the day	13	5.2			
• In the evening	72	28.7			
• Morning and evening	134	53.4			
Do you notice blood while brushing your teeth?					
• Yes	132	52.6	1.67	.784	
• No	70	27.9			
• Sometimes	49	19.5			

poorer oral hygiene on preterm births tend to have a higher awareness of brushing their teeth.

How often do you brush your teeth: There is a positive and highly significant correlation ($r = 0.479$, significance level is 0.01). This shows that people who brush their teeth more often have a higher awareness of brushing their teeth.

When you brush your teeth: There is a positive and highly significant correlation ($r = 0.883$, the significance level is 0.01). This shows that people who brush their teeth in the morning and evening have a higher awareness of oral hygiene.

Table 3 shows that the duration of brushing their teeth for most women or 49.4% of them was 1 minute, most of them brushed their teeth up to twice a day and most often morning and evening, 37.8% of women did not know that poor dental hygiene affects premature birth, pregnant women are more prone to dental diseases, thought 81% of the interviewees, while the knowledge about the best time for dental treatment during pregnancy was spread across the trimesters with a larger in the first trimester with 27.9%, 59% of women said that dental treatment

hurts pregnancy, 73.7% of pregnant women claimed that they had gaps in the gums and teeth bleeding while brushing 52.5% of pregnant women.

DISCUSSION

Good oral hygiene is crucial because it promotes overall health and improves the quality of life. Millions of people worldwide continue to suffer from oral health problems, and the increasing burden of oral diseases requires increased attention at individual, family, and institutional levels. Poor oral health extends beyond the mouth, affecting the overall health and well-being of individuals. Coordinated action can curb the prevalence of oral diseases, making oral health a personal priority for everyone. Prevention is always the best option, but early detection and treatment are also crucial to ensure optimal outcomes against oral diseases and associated health complications. The study aimed to assess the knowledge and practice of oral health during pregnancy in Prishtina, Kosovo.

However, women's true beliefs regarding the safety of dental treatment during pregnancy have not been adequately assessed until now. A study conducted in Finland showed that 26% of pregnant women believed that dental treatment could affect the normal development of the fetus. The data from our research revealed lower results, with only 12.7% of participants stating that dental treatment during pregnancy affects fetal development [9-11].

According to a study conducted in Australia, providing an overview of the oral health of pregnant women by reporting their status and perception regarding oral health, practices, and knowledge, it was found that 53.9% (n=130) had a high reported prevalence of dental problems. This percentage confirms that poor oral health in mothers is a serious issue, which can also impact the health of newborns [12]. From the results of the study, it emerged that pregnant women had clinical symptoms of gingivitis.

There is a significant link between knowledge and dental practices, women with lower education and lower socio-economic status were more likely to be at risk of poor periodontal health compared to those with higher education levels and higher socio-economic status [11]. Education is closely tied to the prevention and management of oral diseases. This is supported by other studies where better knowledge of hygiene and dental practices was found in women with tertiary education and higher socio-economic status [13].

The highest percentage of 66.1% of the women in the study belong to the category of unemployed women and is consistent with other studies that affect this issue, while 54.58% of the cases were with secondary education. These factors show us an important rela-

tionship that education level has in general. The raising of knowledge and correct practices about the maintenance of oral hygiene can be effective if we have an education of the population related to this problem in the period of antenatal care.

The most important goal of oral hygiene care during pregnancy is to create a healthy environment through adequate control of dental plaque, tooth brushing, dental flossing, and professional prophylaxis, including cleaning and root treatment, which can be safely performed in the second trimester [14].

The research conducted by [14] involved 366 pregnant women in the USA with periodontal disease between the 21st and 25th weeks of gestation and were randomized into 3 groups depending on periodontal treatment methods: 1) dental prophylaxis with capsule placebo; 2) curettage of periodontal pockets with capsule placebo; 3) curettage of periodontal pockets with metronidazole capsules (250 mg 3 times a day for 1 week). The group of 723 pregnant women who did not undergo periodontal treatment served as a control group.

Pregnant women treated with periodontal pocket curettage and placebo capsules showed lower incidences of preterm birth before the 35th week (0.8%), while pregnant women in the third group exhibited incidence rates of 4.9% and 3.3%, respectively. The preterm birth rate in the control group was 6.3% [15]. Regarding the survey question in the study, we observe that 95 or 37.8% of respondents stated that they do not know if poor oral hygiene causes preterm birth, while only 66 or 26.3% of them declared, yes. Table 3. Our results, compared to the smaller number of respondents and the lack of antenatal education, indicate an optimal level. This is supported by a study conducted by [16], which shows that women with periodontitis are statistically 3.2 times more likely to give birth to a low-weight baby and 3.4 times more likely to give birth prematurely compared to women without periodontitis. A significantly higher number of women had periodontal and gingival diseases in the third trimester of pregnancy compared to early pregnancy. In the third trimester, 42 (28.6%) and 63 (42.9%) women manifested symptoms of periodontal and gingival diseases, respectively [17].

CONCLUSION

Inclusion of oral health education as part of antenatal care can improve knowledge about the importance of oral health in pregnant women

Midwives and nurses can play an important role in improving outcomes, screening, and education about risk factors and prevention of these factors. Treating oral health in the period of antenatal care is a problem that can be controlled and we can prevent many subsequent complications.

From the results, women's knowledge is presented with deficiencies in almost all the variables included in the study, even though the largest percentage of women results in the correct alternative, since a significant percentage of them answered: "I don't know". From the result of our work, we can say that the level of knowledge of pregnant women regarding oral health remains at an unsatisfactory level, the lack of professional knowledge is high and most of them need more information regarding this issue.

Considering that this study was conducted in a healthcare setting, mothers may also have felt compelled to indicate that they attended dental services. Furthermore, dental examinations were not performed on the mothers, so it is not possible to determine actual dental treatment needs. However, within these limitations, this study concludes that oral healthcare utilization among mothers before giving

birth was not adequate. Mothers who reported visiting a dentist during pregnancy were those who were knowledgeable about oral health and knew about the possible link between maternal health and the impact on pregnancy.

RECOMMENDATIONS

Evaluating barriers that prevent women from becoming aware of oral health during pregnancy.

Dental examination should form the core activity of antenatal care along with blood pressure monitoring, weight gain assessment, and obstetric examination.

Conducting sessions on health education to increase the awareness of pregnant women about the importance of maintaining oral hygiene during pregnancy.

Conflict of interest: none declared

Financial support: none declared

REFERENCES

- Petersen PE. The World Oral Health Report 2003: continuous improvement of oral health in the 21st century--the approach of the WHO Global Oral Health Programme. *Community Dent Oral Epidemiol.* 2003;31 Suppl 1:3-23. doi: 10.1046/j..2003.com122.x.
- Kustiyah E, Djannah SN, Handayani L, Tukiyo IW. Analysis of Socio-demographic Factors of Dental and Oral Hygiene among Pregnant Women. *J EduHealth.* 2023;14(04):312-317.
- Petersen PE. Global policy for improvement of oral health in the 21st century--implications to oral health research of World Health Assembly 2007, World Health Organization. *Community Dent Oral Epidemiol.* 2009;37(1):1-8. doi: 10.1111/j.1600-0528.2008.00448.x.
- Gil-Montoya JA, Leon-Rios X, Rivero T, Expósito-Ruiz M, Pérez-Castillo I, Aguilar-Cordero MJ. Factors associated with oral health-related quality of life during pregnancy: a prospective observational study. *Qual Life Res.* 2021;30(12):3475-3484. doi: 10.1007/s11136-021-02869-3.
- Touriño S, Suárez-Cotelo MDC, Núñez-Iglesias MJ, Domínguez-Martín EM, Mosteiro-Miguéns DG, López-Ares D, Novío S. Knowledge, Attitudes, and Practices of Spanish Midwives and Midwifery Students toward Oral Healthcare during Pregnancy. *Int J Environ Res Public Health.* 2021 Jun 4;18(11):6089. doi: 10.3390/ijerph18116089.
- Uwambaye P, Munyanshngore C, Kerr M, Shiau H, Nyiringango G, Rulisa S. Assessment of the Knowledge, Attitude, and Practices of Nurses and Midwives Working at Antenatal Clinics in the Southern Province of Rwanda on Periodontal Diseases: A Cross-Sectional Survey. *Adv Med Educ Pract.* 2020;11:517-523. doi: 10.2147/AMEP.S263403.
- Chawla RM, Shetiya SH, Agarwal DR, Mitra P, Bomble NA, Narayana DS. Knowledge, Attitude, and Practice of Pregnant Women regarding Oral Health Status and Treatment Needs Following Oral Health Education in Pune District of Maharashtra: A Longitudinal Hospital-based Study. *J Contemp Dent Pract.* 2017;18(5):371-377. doi: 10.5005/jp-journals-10024-2049.
- Raju K, Berens L. Periodontology and pregnancy: An overview of biomedical and epidemiological evidence. *Periodontol.* 2000. 2021;87(1):132-142. doi: 10.1111/prd.12394.
- Murtomaa H, Holttinen T, Meurman JH. Conceptions of dental amalgam and oral health aspects during pregnancy in Finnish women. *Eur J Oral Sci.* 1991;99(6):522-26. doi: 10.1111/j.1600-0722.1991.tb01064.x.
- García-Martin JM, González-Díaz Á, García-Pola MJ. [Impact of oral health on the quality of life of pregnant woman]. *Rev Salud Publica Bogota Colomb.* 2017;19(2):145-152. doi: 10.15446/rsap.v19n2.55195.
- George A, Johnson M, Blinkhorn A, et al. The oral health status, practices and knowledge of pregnant women in south-western Sydney. *Aust Dent J.* 2013;58(1):26-33. doi: 10.1111/adj.12024.
- Thomas NJ, Middleton PF, Crowther CA. Oral and dental health care practices in pregnant women in Australia: a postnatal survey. *BMC Pregnancy Childbirth.* 2008;8(1):13. doi: 10.1186/1471-2393-8-13.
- Mills LW, Moses DT. Oral health during pregnancy. *MCN Am J Matern Child Nurs.* 2002;27(5):275-280; quiz 281. doi: 10.1097/00005721-200209000-00006.
- Jeffcoat MK, Hauth JC, Geurs NC, et al. Periodontal disease and preterm birth: results of a pilot intervention study. *J Periodontol.* 2003;74(8):1214-18. doi: 10.1902/jop.2003.74.8.1214.
- Hashim R. Self-reported oral health, oral hygiene habits, and dental service utilization among pregnant women in the United Arab Emirates. *Int J Dent Hyg.* 2012;10(2):142-46. doi: 10.1111/j.1601-5037.2011.00531.x.
- Meqa K, Dragicella F, Disha M, Sllamniku-Dalipi Z. The Association between Periodontal Disease and Preterm Low Birthweight in Kosovo. *Acta Stomatol Croat.* 2017;51(1):33-40. doi: 10.15644/asc51/1/4.
- Gil-Montoya JA, Rivero-Blanco T, Leon-Rios X, Exposito-Ruiz M, Pérez-Castillo I, Aguilar-Cordero MJ. Oral and general health conditions involved in periodontal status during pregnancy: a prospective cohort study. *Arch Gynecol Obstet.* 2023;308(6):1765-73. doi: 10.1007/s00404-022-06843-3.